

ABSTRACT

A semiconductor device in which a main current flows in a direction of thickness of a semiconductor substrate and which offers satisfactory performance and breakdown voltage and also satisfactory mechanical strength of the semiconductor substrate, and which needs no inconvenient control of the exposure system etc. during a photolithography process. The semiconductor device has a semiconductor substrate having a first main surface, a second main surface opposite to the first main surface, and a recess defined in the second main surface by side surfaces and a bottom surface. A semiconductor region is provided in the bottom surface of the recess of the semiconductor substrate, semiconductor regions are provided in the surface of a peripheral region on the second main surface side, and insulating films are provided on the side surfaces of the recess to electrically insulate the semiconductor regions.